

Patent Claims:

1. A drawing machine with a caterpillar conveyor for drawing a linear workpiece through a drawing die, in which said caterpillar conveyor comprises a first chain carrier and a second chain carrier, the first tool chain and the second tool chain forming a drawing plane in which the workpiece to be drawn is caused to move and at least one of the chain carriers being displaceable in a frame (15) absorbing press-on forces between the tool chains, *characterized in that* a first frame half (16, 17) is disposed on a first side of the drawing plane and a second frame half (16, 17) on a second side of the drawing plane, and the first frame half (16, 17) and the second frame half (16, 17) are configured to be symmetrical in the region opposing the press-on forces.
2. The drawing machine as set forth in claim 1, *characterized in that* the frame is configured to be substantially symmetrical.
3. The drawing machine as set forth in claim 1 or 2, *characterized in that* the frame carries the two chain carriers.
4. The drawing machine as set forth in any one of the claims 1 through 3, *characterized in that* the frame is standing on a base or the floor.
5. The drawing machine as set forth in any one of the claims 1 through 4, *characterized in that* first chain wheels for guiding the first tool chain are disposed on the first chain carrier.
6. The drawing machine as set forth in any one of the claims 1 through 5, *characterized in that* second chain wheels for guiding a second tool chain are disposed on the second chain carrier.

7. The drawing machine as set forth in any one of the claims 1 through 6, ***characterized by*** means for neutralizing press-on forces within the frame (15) so that first press-on forces, which are applied to a first press-on plane side (41) and second press-on forces, which are applied to a second press-on plane side (42),
5 are neutralizing each other within said frame (15).
8. The drawing machine as set forth in any one of the claims 1 through 7, ***characterized in that*** means for neutralizing press-on forces are configured to be symmetrical with respect to a drawing plane (19) and/or with respect to a press-on plane (40).
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9. The drawing machine as set forth in any one of the claims 1 through 8, ***characterized in that*** means for neutralizing press-on forces are disposed on both the first frame half (16) and the second frame half (17).
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10. The drawing machine as set forth in any one of the claims 1 through 9, ***characterized in that*** means for neutralizing press-on forces are disposed in a tensile region (30) of the frame halves (16, 17).
- 20 11. The drawing machine as set forth in any one of the claims 1 through 10, ***characterized by*** a force splitter (21) by means of which press-on forces (13) applied for drawing the workpiece (10) are distributed between the frame halves (16, 17), symmetrically with respect to the drawing plane (19).
- 25 12. The drawing machine as set forth in claim 11, ***characterized in that*** the force splitter (21) traverses the drawing plane (19).
13. The drawing machine as set forth in any one of the claims 1 through 12, ***characterized in that*** the caterpillar conveyor (1) comprises a gantry that carries

adjusting means for at least one of the two chain carriers (2, 3), said adjusting means being substantially disposed in the drawing plane (19).

14. The drawing machine as set forth in any one of the claims 1 through 13,
5 *characterized in that* the caterpillar conveyor (1) comprises a gantry that carries first adjusting means for the first chain carrier (2) and second adjusting means for the second chain carrier (3), said first and second adjusting means being substantially disposed in the drawing plane (19).
- 10 15. The drawing machine as set forth in the claims 13 or 14, *characterized in that* the adjusting means comprise at least one hydraulic cylinder for adjusting the chain carriers (2, 3).
- 15 16. The drawing machine as set forth in any one of the claims 13 through 15, *characterized in that* the gantry is configured to be symmetrical with respect to the drawing plane (19) and/or the press-on plane (40) in the region opposing the press-on forces.
- 20 17. The drawing machine as set forth in any one of the claims 1 through 16, *characterized in that* the frame (15) and a gantry for holding the adjusting means for chain carriers (2, 3) are identical.
- 25 18. The drawing machine as set forth in any one of the claims 1 through 17, *characterized in that* the two frame halves (16, 17) are joined together by means of connecting means.
19. The drawing machine as set forth in claim 18, *characterized in that* the connecting means comprise a force splitter (21).

20. The drawing machine as set forth in any one of the claims 1 through 19,
characterized in that a tensile element (frame region 30), which is devised to be
symmetrical with respect to the drawing plane, is provided between a force
splitter (21) and/or a connecting means for the first chain carrier (2) provided
5 between the frame halves (16, 17) and a force splitter (21) and/or a connecting
means for the second chain carrier (3) provided between the frame halves (16,
17).
21. The drawing machine as set forth in any one of the claims 1 through 20,
10 *characterized in that* the drawing die (11) is disposed on the frame (15) with
symmetrically formed supporting means (31) so that forces acting onto the
drawing die (11) are introduced substantially symmetrically into the two frame
halves (16, 17).
- 15 22. The drawing machine as set forth in claim 21, *characterized in that* the
supporting means (31) include at least one cross-tie (32) having a direction
component pointing toward the frame (15).
23. The drawing machine as set forth in claim 21 or 22, *characterized in that* the
20 supporting means include at least one cross-tie (32) having a component
departing from the drawing die (11) and leading toward the frame (15) , away
from the drawing path (12).
24. A method of drawing a linear workpiece through a drawing die, by which the
25 workpiece to be drawn is conveyed by means of a first and a second tool chain
of a caterpillar conveyor, said first tool chain being held by a first chain carrier
and said second tool chain being held by a second chain carrier, at least one of
said chain carriers being displaceable for applying press-on forces and said first
and said second tool chain forming a drawing plane in which the workpiece is

moved, *characterized in that* the press-on forces are applied in the drawing plane.

25. The method as set forth in claim 24, *characterized in that* the press-on forces are
5 applied above and below a press-on plane containing a drawing path (12) and oriented vertically with respect to the drawing plane (40).
26. The method as set forth in claim 24 or 25, *characterized in that* at least one
10 chain carrier (2, 3) is aligned with respect to the linear workpiece (10), the at least one chain carrier (2, 3) being retained in the drawing plane (19) by at least one adjusting means, and is moved and aligned in the drawing plane (19) with respect to the linear workpiece (10) to be drawn.
27. The method as set forth in any one of the claims 24 through 26, *characterized in
15 that* a frame (16, 17) or gantry opposes press-on forces needed for drawing the workpiece symmetrically with respect to the drawing plane.
28. The method as set forth in claim 27, *characterized in that* the frame or gantry receives press-on forces between the tool chains.
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29. A drawing machine as set forth in claim 27 or 28, *characterized in that* the frame carries the two chain carriers.
30. The drawing machine as set forth in any one of the claims 27 through 29,
25 *characterized in that* the frame is standing on a base or the floor.